Computer-generated composition

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The ATF Typesetter's capability extends to the model B-8 and the model CS Photo Units. Both are designed to produce photo typesetting with maximum typographical quality from computer-generated tape and direct keyboard operation. The quality is obtained through an 18 increment system whereby each letter in the alphabet is divided into a fixed number of increments for exact mechanical placing of letters and for easy programming. In addition, the model B-8 has a dual capability of accepting tape from keyboard units and computers. This is of importance to printers without computers, since they are able quickly to produce low-cost photo typesetting by perforating tape on the ATF keyboard and, at the same time, produce photo typesetting from tape generated by an outside computer centre. The change from keyboard tape to computer tape is quick and without modification to the B-8 photo unit. Only the installation of the type-disc and corresponding control-boards are needed.

The computer compatibility of the model B-8 machine was demonstrated in the production of the *Electronic Buyer's Guide* published by McGraw Hill in New York. This 1,186 page directory contains alphabetic listings of electronic manufacturers and their products. The composition started with the production of endless tape which was fed through the Honeywell 200 computer and NCR Converter at the McGraw Hill processing centre. The computer produced $8\frac{1}{2}$ million characters on paper tape and fed through 3 ATF B-8 Photo Units to produce the setting for the directory. A special disc was designed to include 6 and 8 point types and special logotypes. Fixed spaces and line leader darts were used to justify the lines. This eliminated complicated programming for automatic hyphenation.

At present the Digital Equipment Corporation is producing a program for the ATF model B-8 Photo Unit designed for a newspaper in Connecticut. Here in Europe there are two computer programs being planned for ATF Typesetters.

The model CS Photo Unit called 'Computer Slave' is developed to operate only from computer-generated tape. This model is in production at Perry Publication Corp of Palm Beach, Florida. It has been operating with an RCA 301 Computer for the production of photo typesetting for several years. The company is using six model CS typesetters in three separate plants. One is setting the *Florida TV Guide* and the others are using the machines for straight matter typesetting of weekly and daily newspapers. The endless tape is produced by Friden Flexowriters and Fairchild keyboards and is transmitted by Data-speed equipment to Palm Beach to be run through the RCA 301 computer for justification and hyphenation. It is returned for typesetting to the ATF machines. *Television Guide* is produced in similar manner with a production of approximately 10,000 lines of programmes weekly.

The logotypes, special colour and standard symbols are included on the disc and set automatically into position. These CS typesetters have been operating successfully for more than three years.

The programming of typefaces into a computer is greatly simplified by the 18 increment system. The largest increment number is 18 and is used for the widest letter in the alphabet, 'M'. The narrower letters use a lesser number of increments; for example the 'A' has 13 and 'I' has eight. The numbers apply for an entire type family and remain the same for all point sizes from 6 to 14 point. Other type families have different increment values. The various point sizes of a type family are obtained in the Photo Unit through gearing arrangements and a type-disc. The total width of a column consists of a specific number of increments in a specific point or body size. The increments can be converted into pica measurements; for example 600 increments in 8 point Baskerville gives a column-width of 22.8 picas. The conversion is obtained from charts supplied with the typesetter. To obtain justification the computer counts the increments of each character and adds increments to each word space to reach the number required for the column measure.

In order to select proper characters on the type-disc the computer must also generate a group of specific function codes for the operation of the photo unit. There are a total of 176 positions available on the model B-8 and CS type-disc. It includes two complete fonts of type—a roman with italic or roman with bold of the same point size. It is possible to design special discs to include logotypes and different point sizes of a type face. This gives complete flexibility to the needs of special job requirements.

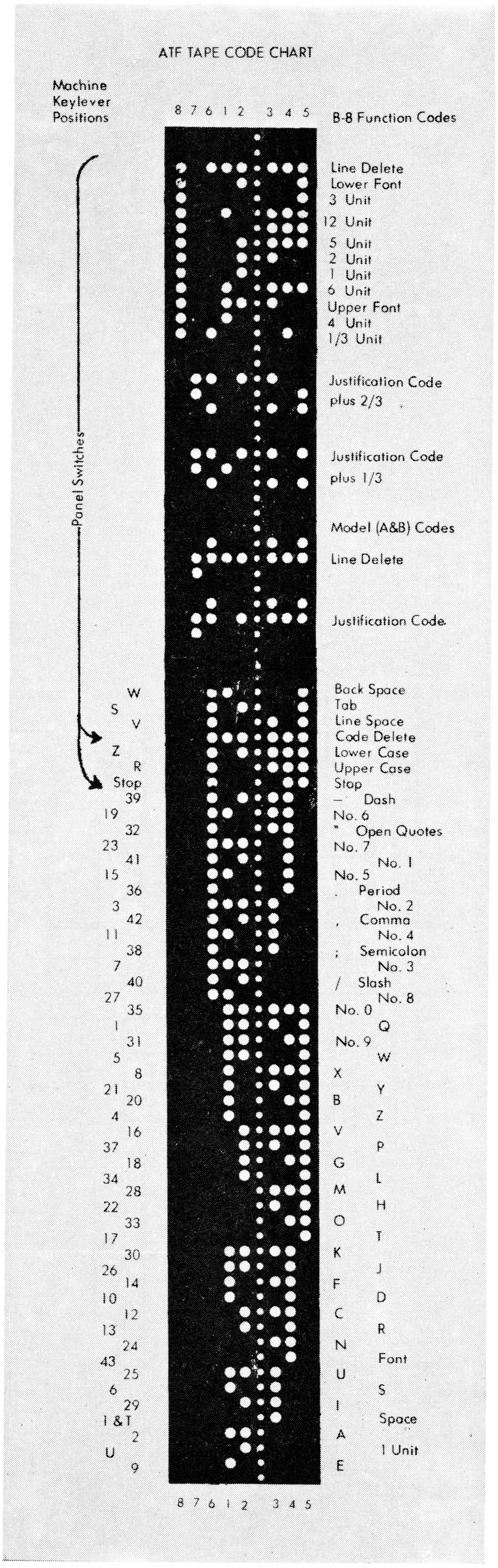
Fig 1 ATF code chart for keylever positions and function codes

SEQUENCE OPERATION OF RELAYS FOR JUSTIFICATION							
SEQUENCE OPERATION OF WS CONTACT IN ANY JUSTIFIED LINE	SEQUENCE OPERATION OF CR RELAYS IN ANY JUSTIFIED LINE	RELAY					
		WSR	CR-3	CR-4	CR-5	CRP	CR-8
FIRST	3	PU	PU				
		DO	U			PU	
SECOND	3-4	PU	U	PU		U	
		DO	U	U		DO	
THIRD	4	PU	DO	U			
		DO		U		PU	
FOURTH	4-5	PU		U	PU	U	
		DO		U	U	DO	
FIFTH	5	PU		DO	U		
		DO			U	PU	
SIXTH	3-5	PU	PU		U	U	
		DO	U		U	DO	
SEVENTH	3-4-5	PU	U	PU	U		
		DO	U	U	U	PU	
EIGHTH	3-4-5	PU	U	U	U	U	PU
		DO	U	U	U	DO	U

PU - PICK UP DO-DROP OUT U-HELD UP OR OPERATED

UNITS OF JUST.	CODE 1 W.S.	CODE 2 W.S.	CODE 3 W.S.	CODE 4 W.S.	CODE 5 W.S.	CODE 6 W.S.	CODE 7 W.S.	CODE 8 W.S.
−7								367
−6							367	3467
−5						367	3467	467
−4					367	3467	467	4567
−3				367	3467	467	4567	567
−2			367	3467	467	4567	567	3567
−1		367	3467	467	4567	567	3567	34567
0	67	67	67	67	67	67	67	67
+1	1367	1367	1367	1367	1367	1367	1367	1367
+2	2367	13467	13467	13467	13467	13467	13467	13467
+3	12367	2367	1467	1467	1467	1467	1467	1467
+4		23467	2367	14567	14567	14567	14567	14567
+5		12367	23467	2367	1567	1567	1567	1567
+6		123467	2467	23467	2367	13567	13567	13567
+7			12367	2467	23467	2367	134567	134567
+8			123467	24567	2467	23467	2367	167
+9			12467	12367	24567	2467	23467	2367
+10				123467	2567	24567	2467	23467
+11				12467	12367	2567	24567	2467
+12				124567	123467	23567	2567	24567
+13					12467	12367	23567	2567
+14					124567	123467	234567	23567
+15					12567	12467	12367	234567
+16						124567	123467	267
+17						12567	12467	12367
+18						123567	124567	123467
+19							12567	12467
+20							123567	124567
+21								12567
+22								123567

American Type Founders Co., Inc., 200 Elmora Avenue, Elizabeth, N. J. PRINTED IN U.S.A.



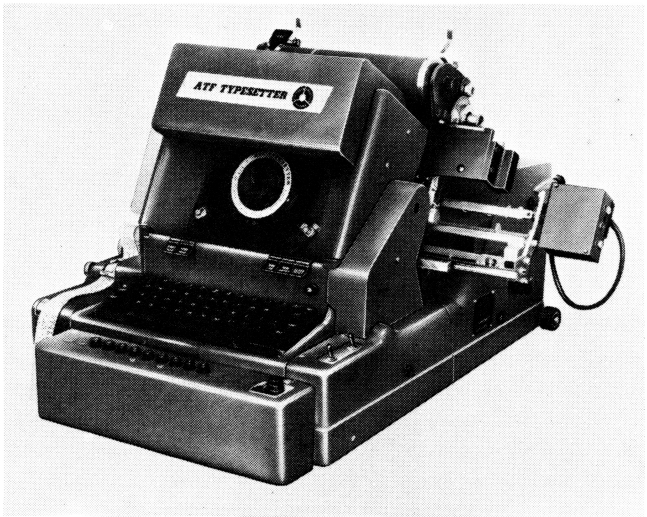


Fig 2 ATF typesetter photo unit model B-8 accepting keyboard or computer-generated tape

Fig 3 ATF typesetter keyboard unit showing hard copy tape reader, tape punch and automatic justification

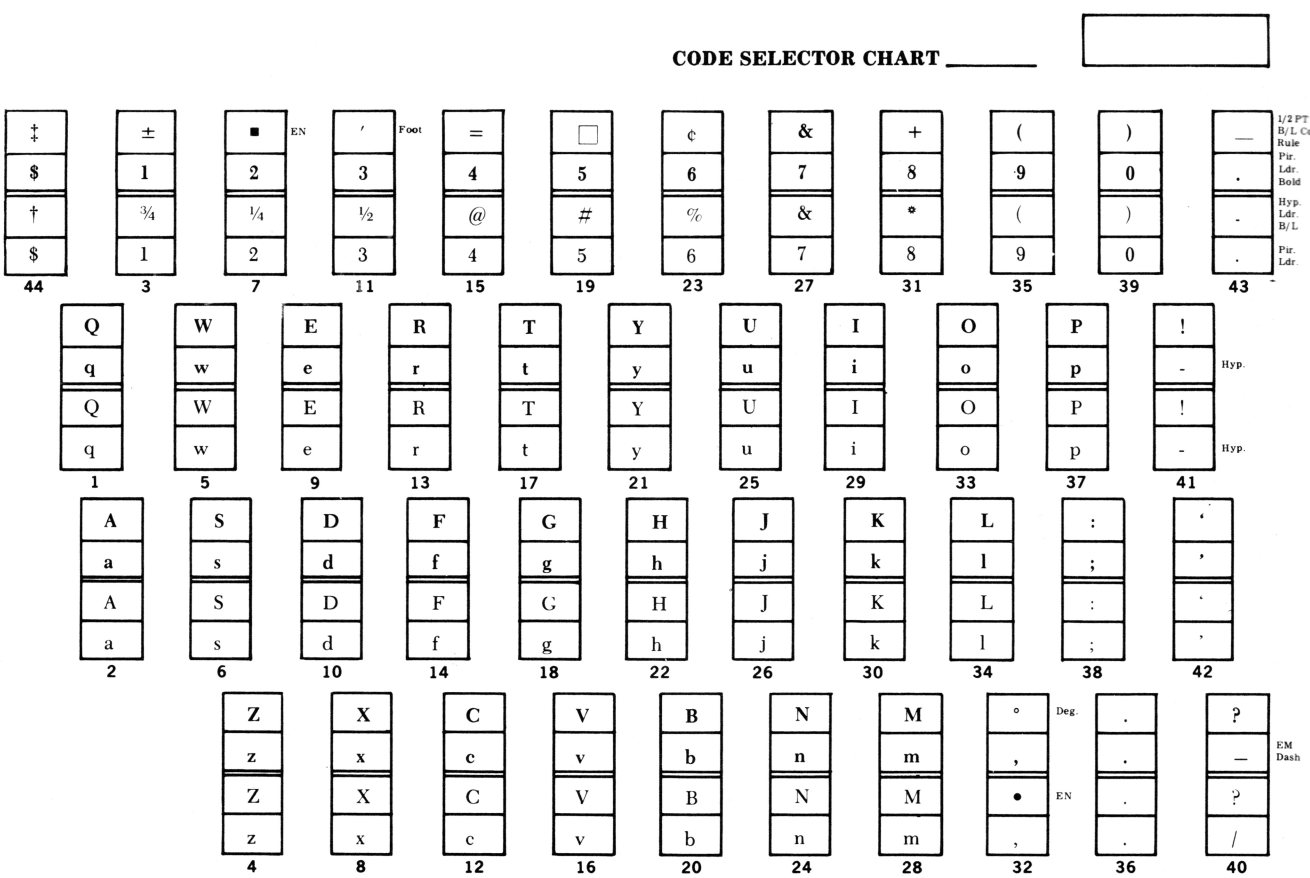

CODE SELECTOR CHART
‡ $ † $ 44
± 1 ¾ 1 3
■ EN 2 ¼ 2 7
' Foot 3 ½ 3 11
= 4 @ 4 15
□ 5 # 5 19
¢ 6 % 6 23
& 7 & 7 27
+ 8 * 8 31
(9 (9 35
) 0) 0 39
— 1/2 PT B/L Comm. Rule . Pir. Ldr. Bold - Hyp. Ldr. B/L . Pir. Ldr. 43
Q q Q q 1
W w W w 5
E e E e 9
R r R r 13
T t T t 17
Y y Y y 21
U u U u 25
I i I i 29
O o O o 33
P p P p 37
! - Hyp. ! - Hyp. 41
A a A a 2
S s S s 6
D d D d 10
F f F f 14
G g G g 18
H h H h 22
J j J j 26
K k K k 30
L l L l 34
: ; : ; 38
' ' ' ' 42
Z z Z z 4
X x X x 8
C c C c 12
V v V v 16
B b B b 20
N n N n 24
M m M m 28
° Deg. , • EN , 32
. . . . 36
? — EM Dash ? / 40

Fig 4 Standard keyboard arrangement No. 264 for the ATF typesetter B-8

Fig 5 Width control board: one board for all point sizes of one type family

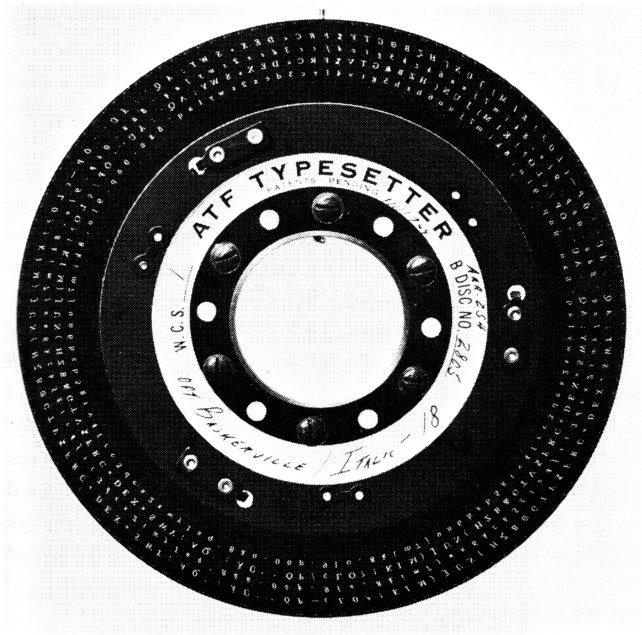


Fig 6 ATF type disc with 176 characters in two type fonts